
Terminal Emulation

This chapter describes the functions of the Terminal Emulation application. This module provides communications between your PC and the Meridian 1 allowing for data transfer during a communications session.

Overview

The Terminal Emulation application emulates the VT100/220/320 series of terminals to set up communications between your PC and the Meridian 1. It supports the transfer of ASCII data during a communications session and provides normal TTY and VT220 access to overlays that are not supported by MAT. Terminal Emulation uses the Communications Supervisor to initiate the connections to the Meridian 1. The Communications Supervisor then invokes its Communications Servers to perform the actual communications.

Features

- Terminal Emulation supports the following features:
- Double-height, double-width, blinking, bold, and underlined characters
- Complete graphic character set, including a special font for representing control characters
- Scrolling regions
- 80 and 132 column modes
- Echo, no echo, local mode, and autowrap on/off
- Reverse video characters and reverse video screen
- Cursor types—block, underline, vertical line, or none
- Selectable cursor blink rate

- User-definable <Tab> stops
- Programmable function keys
- Display control mode
- National Replacement Character (NRC) sets

Connecting to a host

The following steps provide an example of how to connect to the Meridian 1 and start a terminal emulation session. Use these steps when setting up your own session.

- 1** Run Terminal Emulation by double-clicking on the **Terminal Emulation** icon in the Meridian Administration Tools program group.
- 2** Open an existing site for emulation by clicking on **Open Site** from the File drop-down menu. When the Open Site dialog appears, click on the site name in the list box (e.g., MATSAMPL) and click on the **OK** command button to select it. Notice that this site name appears in title bar of the Terminal Emulation window.
- 3** Open an application within this site by clicking on **Open Applications** from the File drop-down menu. An application is another resource within the site which the system can emulate. This can include such resources as Meridian Mail or Meridian Link.

For this example, open the Meridian Mail application by clicking on the **Add** command button. In the New Application Processor dialog which appears, click on the option button for **Meridian Mail**. Click on the **OK** command button to select this processor.

- 4 Since Meridian Mail is a new application, the Communication Parameters dialog will appear prompting you to enter its communications information.

For this example, enter the following parameters:

M1 Modem Type: **Hayes Compatible**

M1 Modem Phone Number: **690**

M1 Modem Password: **[leave blank]**

M1 Modem Buffer Equipment Type: **None**

PC Modem Type: **Hayes Compatible**

PC Comm Port: **Com 2**

Baud Rate: **1200**

Data Bits: **7**

Stop Bits: **1**

Parity: **Even**

Click on the **OK** command button to save this information and exit to the main window.

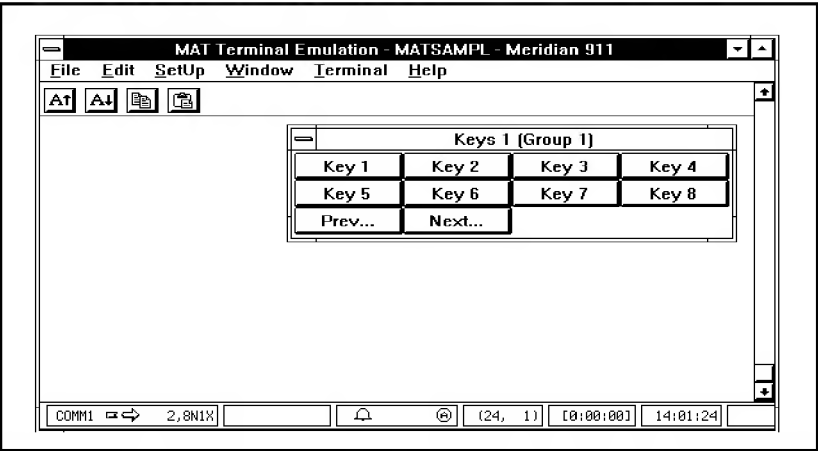
- 5 Select the type of terminal being emulated by clicking on **Terminal Type** from the SetUp drop-down menu and by clicking on the terminal type in its cascading menu. For this example, click on **VT220**.
- 6 The remaining functions in the SetUp drop-down menu allow you to configure Terminal Emulation to meet more specific requirements. They contain default parameters and only need to be modified as required by the specific terminal. For this example, keep the remaining SetUp functions with their default settings.
- 7 Once you have entered the parameters for this terminal emulation session, you are ready to connect to the application at this site. To do so, click on **Connect** from the Terminal drop-down menu. Terminal Emulation will attempt to connect to the application and begin the terminal emulation session. Use the Terminal Emulation Edit, SetUp, and Window commands to manage the activity during this session.
- 8 To end the terminal emulation session, click on **Disconnect** from the Terminal drop-down menu.

This completes the sample connection. Refer to the remaining sections in this chapter for complete details on the functions outlined in these steps.

Terminal Emulation Window

To access Terminal Emulation, double-click on the **Terminal Emulation** icon in the Meridian Administration Tools program group. The Terminal Emulation main window will appear listing the commands and graphical tools required to connect to the Meridian 1 and begin the emulation session.

Figure 26
Terminal Emulation main window



This window contains certain graphical tools which allow you to adjust its text.

Font Size: Click on the Font Size icons ('A' arrow up and 'A' arrow down) to increase or decrease the size of the font in the Terminal Emulation window.

Copy: Click on the Copy icon to copy the highlighted text in the Terminal Emulation window to the Windows Clipboard.

Paste: Click on the Paste icon to paste the contents of the Clipboard to the Terminal Emulation window.

Status Window: The status window at the bottom of the main window lists the current status of this session. This includes the following:

- Communications connection status
- Bell, local, echo, insert, autowrap, & newline activated
- Cursor position
- Time

Refer to the section Status Window later in this chapter for a complete description of the items in this window.

File functions

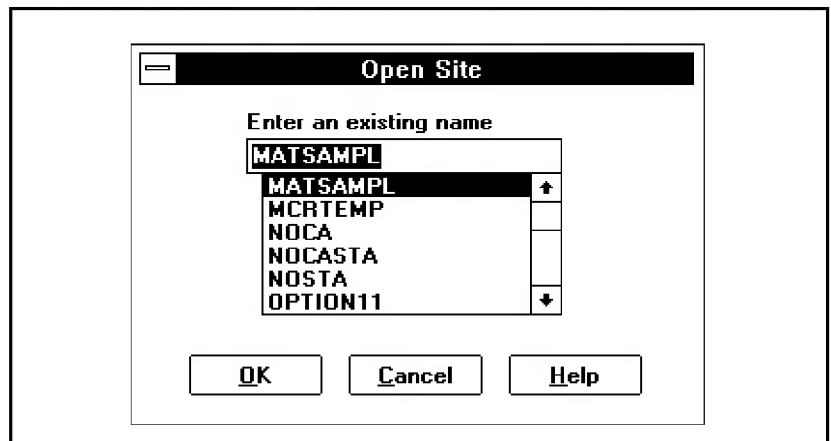
The File menu contains functions allowing you to open and close sites and applications, print the contents of the terminal window, record and replay Terminal Emulation sessions, and exit from the system.

Open Site

Use the Open Site function to open a site for emulation. If no site is opened, then the Terminal Emulation commands will appear grayed and therefore cannot be used.

To open a site, click on **Open Site** from the File drop-down menu. Select the site from the list of predefined site names and click on the **OK** command button.

Figure 27
Open Site dialog



These sites were previously created from the Site Configuration function. Refer to the chapter on Site Configuration in this manual for complete details on creating sites.

When you select a site, the configuration parameters for that site will be used for emulation. If you exit from Terminal Emulation and return to it again, it will use the currently opened site for emulation.

Close Site

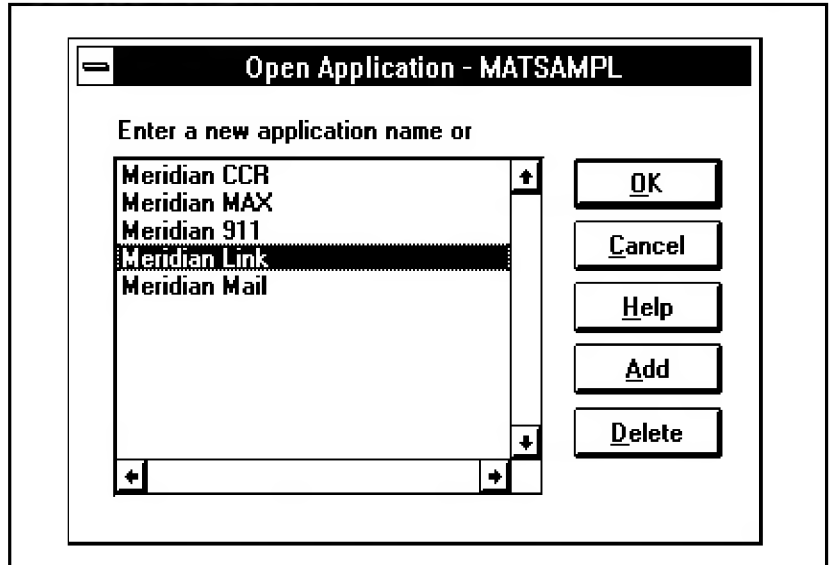
Click on the **Close Site** command to close the currently opened site. This protects the site information from being accessed by unauthorized users.

Open Applications

The Open Applications function allows you to open an application within a site. An application refers to another resource or switch attached to that site's Meridian 1 such as a Meridian Mail server. When you open a site for emulation, it will only contain the parameters for connection to the Meridian 1 that were defined in the Site Configuration function from MAT Common Services.

To open an application, click on **Open Applications** from the File drop-down menu. The Open Application dialog will appear prompting you to select an application for this site.

Figure 28
Open Application dialog



Select an existing application by double-clicking on the application name in the drop-down list box. Terminal Emulation will then be configured for communications with this application at this site.

Add: If you wish to add another application to the list of available applications, click on the Add command button in this dialog. The New Application Processor dialog will appear with the prompt: **Enter a new application name or select a predefined application name**. Select a new application from the list of predefined applications in the option button box (e.g., Meridian Mail, Meridian Link, etc.) or type in a new application name.

Delete: Click on the **Delete** command button to delete an application from the drop-down list box in the Open Application dialog. This is used to remove any applications which are not required for this site.

If you select an application for which you did not enter any communications parameters, then the Communication Parameters dialog will appear prompting you to enter its communication parameters. Enter these parameters and click on the **OK** command button to save it. Refer to the section entitled 'Communication' later in this chapter for complete details on entering the communications parameters for an application.

Click on the **OK** command button from the Add Application dialog to select this application. Notice that this application name will appear on the title bar of the Terminal Emulation main window along with the site name. Return to the Open Application dialog when you wish to change an application again.

Print Screen

Terminal Emulation allows you to print the current contents of the window at any time. To print the contents of the window to the printer selected in the Printer Setup function, click on **Print Screen** from the File drop-down menu.

Printer Setup

Use the Printer Setup function to select the type of printer for output. This dialog lists all of the printers you have set up using the Windows Setup Printer function (from Control Panel).

To select a printer for Terminal Emulation, click on **Printer Setup** from the File drop-down menu. A dialog will appear prompting you to select a printer from the list of predefined printers. Click on the desired printer from the printer list box and click on the **OK** command button to select the printer and return to the main window.

Printer Fonts

Use the Printer Fonts function to select the font used for the text which appears in the Terminal Emulation main window as well as the printed output.

To select a printer font, click on **Printer Fonts** from the File drop-down menu. The Font dialog will appear listing the available fonts for the selected printer. Select the font from the Font list box and enter its style and size in the Font Style and Size list boxes. Click on the **OK** command button to select this font and exit to the main window.

Capture

The Capture function enables Terminal Emulation to write the text in its main window to a file.

To invoke this function, click on **Capture** from the File drop-down menu. This will display a dialog box allowing you to name a capture file, save the characters, and record this information in real time. Use the following options to enter the desired information.

Save Characters: Click on the desired option button to save the file's characters and attributes. Select **All** to save all characters as they are received. Select **Displayable** to determine if control characters will be filtered out before being recorded in the file.

Record in Real Time: Turn on (X) this check box to allow the system to insert timing information between bytes as Terminal Emulation writes data out to the capture file. This is useful for demonstrations and error analysis.

Note: If the specified file already exists, the system will prompt if you wish to overwrite the file or to append the data to the existing file.

Playback

Terminal Emulation allows you to playback a file that was recorded using the Capture function. Data from the file is interpreted by Terminal Emulation as if it is newly received from the host system. All activities that are triggered by reception of data (e.g., screen scrolling) take place as if the host were sending the data at the current time.

To playback a previous file, select **Playback** from the File drop-down menu. A dialog will appear in which you can open the desired capture file. Enter its name in the Open File Name field or double-click on the name in the Filename list box.

Click on the **OK** command button to begin the playback of the captured file.

Exit

Click on the **Exit** command to exit from Terminal Emulation.

Edit functions

Terminal Emulation includes a set of editing commands which you can use to manipulate the text appearing in the main window.

Copy

Use the Copy command to copy the text from the Terminal Emulation main window to the Windows Clipboard. You can then save this text to a file or copy it to another Windows application.

To copy this text, first highlight the text in the main window using the mouse pointer. Click and drag over the text you wish to highlight. Notice that a dotted outline appears around this text. Click on **Copy** from the Edit drop-down menu to copy the selected text to the Clipboard.

Paste

Use the Paste command to copy the contents of the Windows Clipboard back to the Terminal Emulation main window.

To copy the text to the Terminal Emulation main window, click on **Paste** from the File drop-down menu. The Clipboard must contain some text or image in order for the Paste command to function.

Select All

Use the Select All command to highlight all of the contents of the Terminal Emulation main window. You can then copy this block of text to the Clipboard using the Copy command.

To select the entire contents of the Terminal Emulation window, click on **Select All** from the Edit drop-down menu.

SetUp functions

The SetUp functions allow you to customize the communications and terminal configuration settings for Terminal Emulation.

Communication

The Communication function is used to enter the communications parameters for an application within this site. In order for Terminal Emulation to emulate the application on the site's Meridian 1, it must be set up with the correct communications parameters (e.g., baud rate, communications ports, optional buffer units, etc.).

Note: You can only enter communications parameters for an open application within a site. If you did not open an application, then the Communication command in the SetUp drop-down menu will appear grayed.

To enter the communications parameters for the currently opened application, click on **Communication** from the SetUp drop-down menu. The Communication Parameters dialog will appear containing the parameters for this application.

Figure 29
Communications Parameters dialog

Communication Parameters - MATSAMPL

M1 Modem Type Hayes Compatible Custom Configuration Phone Number 690 M1 Modem Password Buffer Equipment Type None Baud Rate ☐ 110 ☐ 300 ☐ 600 ☒ 1200 ☐ 2400 ☐ 4800 ☐ 9600 ☐ 19200 Data Bits ☐ 5 ☐ 6 ☒ 7 ☐ 8 Stop Bits ☒ 1 ☐ 1.5 ☐ 2	PC Modem Type Hayes Compatible Custom Configuration PC Comm Port Com 2 Parity ☐ None ☐ Odd ☒ Even ☐ Mark ☐ Space
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OK Cancel Help

Enter this application's communications parameters in the following fields.

M1 Modem

In the M1 Modem fields, enter the parameters for an optional modem attached to this site's Meridian 1.

Type: From the Type drop-down list box, select the type of modem used for communications at the Meridian 1 (Custom, Hayes Compatible, or None-Direct Connect).

Custom Configuration (M1 Modem): If you select **Custom** as the type of modem for the Meridian 1, then you can enter a custom configuration using the Custom Equipment Settings function. This allows you to define the command sequences which may be required to access the Meridian 1. Different command sequences can be entered for different types of custom equipment. These settings will automatically be invoked when a modem from the PC attempts to communicate with the Meridian 1's communications device.

To enter custom settings for a specific type of equipment, click on the **Custom Configuration** command button. The Custom Equipment Settings dialog will appear allowing you to select a defined type of equipment or enter a new type of equipment with new settings. Enter this information in the following fields.

Equipment: To enter a new equipment name with new custom settings, type in the name of the new equipment in the Equipment drop-down combo box. This can be a brief description of this equipment or its name. It is only used for informational purposes. If you wish to edit a predefined equipment configuration, select the equipment name from this list box and enter the new information in its corresponding Await Text, Time Out, and Send Text fields.

If you wish to delete a type of equipment from the defined list of equipment in the Equipment drop-down combo box list, click on the equipment name in the Equipment list to highlight it and click on the **Delete** command button. At the prompt: **Are you sure? Delete Equipment.**, click on the **Yes** command button to delete that equipment name and its commands. Click on **No** to exit to the Custom Equipment Settings dialog without deleting it.

Different types of equipment can have multiple commands assigned to them. Terminal Emulation will run these commands sequentially as they are listed in these fields (the first line will be executed first, then the second line, etc.). Refer to your equipment documentation for the command sequences which are required to access the equipment's communications device.

Enter the equipment's settings (command sequences and times) in the following fields.

Await Text: Some types of communications equipment may require that a modem waits for a command to be sent to it from the equipment before it can send a command back to it. In this field, enter the command which is to be sent from this equipment to the PC's modem. Control characters are represented with the caret (^) before the character (e.g., ^M would represent <Ctrl-M>).

Time Out: In this field, enter the maximum time out for this equipment. This determines the time which the system will wait for the command in the Await Text field to be sent from this equipment to the modem at the PC.

Send Text: In this field, enter the command which will be sent from the PC's modem to this equipment. This is used to send commands through the equipment to reach the communications device.

If this equipment requires multiple Await Text and Send Text commands, then continue to enter these commands and their times in the remaining Await Text, Time Out, and Send Text fields.

Once you have entered this equipment's information, click on the **OK** command button to save it. This will return you to the Communication Parameters dialog with this equipment selected.

If you edit the equipment's commands and then attempt to exit from the dialog or select another type of equipment, the system will prompt you with the message: **The settings have changed. Do you want to save the changes?** Click on the **Yes** command button to save these changes or **No** to exit without saving them.

Phone Number: In the Phone Number field, enter the telephone number which the PC's modem will dial to connect to the Meridian 1.

M1 Modem Password: In the M1 Modem Password field, enter the password required to connect to the Meridian 1.

Buffer Equipment Type: This identifies the buffer unit connected to the Meridian 1 (if any). This only applies to the MAT Traffic Analysis, Call Accounting and Call Tracking applications.

PC Modem

In the PC Modem fields, enter the parameters for an optional modem attached to the PC.

Type: From the Type drop-down list box, select the type of modem that the PC uses for communications (Custom, Hayes Compatible, or None-Direct Connect).

Custom Configuration (PC Modem): If you select **Custom** as the type of modem for the PC, then you can enter a custom configuration using the Custom Modem Settings function. Certain modems use commands which have not been defined for the MAT system. Therefore, you must enter the parameters for the modem and then select that modem for communications.

To enter the parameters for a custom modem, click on the **Custom Configuration** command button. The Custom Configuration dialog will appear with the previously selected custom modem (if any have been defined).

Modem: Select a predefined custom modem (if any) by clicking on the name of that modem in the Modem drop-down combo box. Notice that its parameters will appear in the fields of this dialog. To enter a new modem's parameters, enter the modem name in the edit field of this drop-down combo box and these parameters in the remaining fields of this dialog. The modem name is used for informational purposes only and can contain such information as its brand name, speed, or description.

Dial Prefix: In this field, enter any command which appears before the telephone number when dialing to the modem at the external source (e.g., ATDT).

Dial Suffix: In this field, enter the command which appears after the telephone number when dialing (e.g., an authorization system code).

Initialization: Most modems require a string of characters which must be entered at the command line before communications is attempted. This command is used to initialize and start up the modem for communications. In this field, enter the initialization string for this modem.

Answer Setup: This field is for future use by other MAT applications and is not required for Terminal Emulation.

Disconnect: In this field, enter the command which disconnects (hangs up) the modem from the external source and ends the communications session (e.g., ATH).

Connect: In this field, enter the response (echo) which the modem is seeking to acknowledge a connection to the external source (e.g., CONNECT).

Command OK: When a command is entered at the modem prompt, it requires a signal (echo) which indicates that it has been answered. This could indicate such activities as the modem switching from data mode to command mode. In this field, enter the command which indicates this response (e.g., OK).

Once you have entered this modem's parameters, click on the **OK** command button to save it and select that modem.

If you edit the modem's parameters and then attempt to exit from the dialog or select another modem name, the system will prompt you with the message: **The settings have changed. Do you want to save the changes?** Click on the **Yes** command button to save these changes or **No** to exit without saving them.

If you wish to delete a modem name from the defined list of modems in the Modem drop-down combo box list, click on the modem name to highlight it and click on the **Delete** command button. At the prompt: **Are you sure? Delete Modem Name.**, click on the **Yes** command button to delete it. Click on **No** to exit to the Custom Modem Configuration dialog without deleting the selected modem.

PC Comm Port: From the PC Comm Port drop-down list box, select the communications port on the PC to which this modem is attached (Com 1, Com 2, Com 3, or Com 4).

Baud Rate: From the Baud Rate option button box, select the baud rate at which these modems will be communicating (110, 300, 600, 1200, 2400, 4800, 9600, or 19200).

Data Bits: From the Data Bits option button box, select the data bits used for communications between these modems (5, 6, 7, or 8).

Stop Bits: From the Stop Bits option button box, select the stop bits used for communications between these modems (1, 1.5, or 2).

Parity: From the Parity option button box, select the parity used for communications between these modems (None, Odd, Even, Mark, or Space).

Once you have entered this application's parameters, click on the **OK** command button to save it and return to the Terminal Emulation main window.

Terminal Type

The Terminal Type options allow you to select the type of terminal the system is emulating for communications. Select the type of terminal being emulated by clicking on **Terminal Type** from the SetUp drop-down menu and clicking on the terminal type in its cascading menu. Select the terminal type from the following: **VT100**, **VT220**, or **VT320**. When you click on the terminal type in this cascading menu, a check mark will appear next to it to indicate that this is the terminal type being used.

SDI Port

The SDI port number is the port on the Meridian 1 with which Terminal Emulation will communicate. These were defined using the Site Configuration function and only applies to the site; not the application. For complete details on how to enter the SDI port configurations, refer to the chapter entitled: Site Configuration in this manual.

To select an SDI port for Terminal Emulation, click on **SDI Port** from the SetUp drop-down menu and click on the desired SDI port number in its cascading menu. Select from: **SDI Port 1**, **SDI Port 2**, **SDI Port 3**, or **SDI Port 4**. Notice that a check mark appears next to the selected SDI port number.

Terminal Setup

Use the Terminal Setup function to configure Terminal Emulation to match the specific remote Meridian 1. Different remote applications (Meridian 1's) require different terminal settings. You must therefore use this function to set up Terminal Emulation to match each site. If you encounter problems using the remote application once a connection is established, review the selections in the Terminal Setup dialog to verify that its settings are correct.

To enter this information, click on Terminal from the SetUp drop-down menu. The Terminal Setup dialog will appear containing the terminal configuration options.

Figure 30
Terminal Setup dialog

VT Terminal Setup

☐ Newline ☒ AutoWrap ☐ No Bell
☐ Insert ☐ Local ☐ Reverse Video
☐ Echo ☐ Display Controls ☐ Keyboard Lock

Cursor Key Mode: ☒ Normal ☐ Application
 Keypad Mode: ☒ Numeric ☐ Application
 Delete Sends: ☒ DEL/CAN ☐ BS/DEL
 Column Width: ☒ 80 ☐ 132
 Maximum Character Transfer Rate: ☒ Unlimited ☐ 60 cps ☐ 150 cps
 Character Set Mode: ☒ Multinational ☐ National
 User Preferred Set: ☒ DEC Supplemental Graphic ☐ ISO Latin-1

VT100 Terminal Id 7 Bit Environment
 No Status Line Normal Print Mode
 Answerback =

Ok Cancel

Enter the following configuration options for this connection.

Newline: When the Newline check box is turned on (X), a received Line Feed (<LF>), Form Feed (<FF>), or Vertical Tab (<VT>) character moves the cursor to the first column of the next line. The <Enter> key sends both a Carriage Return (<CR>) and a <LF>. When this option is not set, the <Return> key sends only a <CR>.

AutoWrap: Turn this check box on (X) to have Terminal Emulation automatically display the character on the next line if the last character is in the 80th (or 132nd) column. The terminal window will scroll upward if the cursor is at the end of the scrolling region. When this option is set, Terminal Emulation displays the character 'A' in the status window. If this is set improperly, Terminal Emulation may lose information at the end of a line, or may occasionally insert an extra blank line.

No Bell: Turn on (X) the No Bell check box to prevent the PC from signalling a sound (through its speaker) when instructed by the remote Meridian 1. The remote Meridian 1 sends a <Ctrl-G> (or BEL character) to ring the terminal bell. When the **No Bell** option is selected, any BEL characters received will not cause the PC to sound. If you turn this check box off (blank field), Terminal Emulation will display the bell icon in the status window indicating that any BEL characters received will cause the PC to sound.

Insert: Turn on (X) the Insert check box to have Terminal Emulation insert new characters in the middle of a line or overwrite the character at the current cursor position. When this option is enabled, the system will display an 'I' in the status window.

Local: Turn on (X) the Local check box to prevent the system from sending characters to or receiving characters from a remote Meridian 1. Any character entered on the terminal will be displayed locally but will not be sent over the communications channel. When this option is enabled, the system will display an 'L' on the status window.

Reverse Video: Turn on (X) the Reverse Video check box to reverse the foreground and background colors of the VT screen.

Echo: Turn on (X) the Echo check box to display the character on the screen before sending it to the remote Meridian 1. Certain remote applications are *Full Duplex*, meaning that the character typed on the keyboard is first processed by the application before it is sent back to Terminal Emulation to be displayed. Other remote applications are *Half Duplex*, meaning that they expect Terminal Emulation to display the character when typed.

When the Echo option is set improperly, Terminal Emulation may display two characters for every character typed, or it may not display any characters even though the application is responding properly. When this check box is turned on (X), the system will display an 'E' on the status window.

Display Controls: This option is valuable for diagnostic purposes and for determining the proper settings if you encounter problems using Terminal Emulation. When this check box is turned on (X), Terminal Emulation displays symbols from a special Display Controls font when it receives a control character rather than interpreting it. With this option enabled, you can determine the control characters which the host application is sending to your terminal.

Keyboard Lock: Turn on (X) the Keyboard Lock check box to disable all keyboard keys except Hold Screen, Print Screen, and Break.

Cursor Key Mode: This option determines how Terminal Emulation interprets the cursor (arrow) keys. Normal Mode causes the cursor keys to send ANSI cursor control sequences while Application Mode causes the cursor keys to send application control sequences. ANSI cursor control sequences begin with the CSI character, while application sequences begin with the SS3 character. For example, the <Up Arrow> key sends the sequence 'CSI A' when in Normal Mode, and the sequence 'SS3 A' when in Application Mode.

Keypad Mode: This option determines how Terminal Emulation interprets the keypad keys. Numeric Mode causes keypad keys to send characters that match the numeric, comma, period, and minus sign keys on the main keypad. Application Mode causes keypad keys to send application control functions. For example, pressing the <2> key on the keypad sends the ASCII code for the number '2' when in Numeric Mode, and the sequence 'SS3 r' when in Application Mode.

Delete Sends: This option determines which character is sent when you press the <Delete> key. Selecting **DEL/CAN** will cause Terminal Emulation to send the DEL character (hex 7F) when the <Delete> is pressed and will send the CAN character (hex 18) when <Shift-Delete> is pressed.

Column Width: This determines the number of columns displayed. The remote Meridian 1 may also set the column width through the use of its control sequences. There are two options for column width: 80 and 132. Select **80** when you wish to have 80 columns or characters displayed, and select **132** when you wish to have 132 columns or characters displayed.

Maximum Character Transfer Rate: This controls the rate at which Terminal Emulation sends characters to the host. For the fastest transfer rate, select **Unlimited**. Select **60** cps (characters per second) or **150** cps to slow the transmission of characters. The 60 cps and 150 cps options are useful when a particular host or application cannot handle receiving characters at a fast rate.

Character Set Mode: This option allows you to set the mode of the characters.

Multinational Mode allows the terminal to generate 8 bit characters from the DEC multinational character set. This is made up of the 7 bit compatible ASCII graphics set and the 8 bit compatible DEC supplemental graphics set, and includes the standard characters for the English language as well as most characters used in European languages.

National Mode allows the terminal to generate 7 bit characters from the National Replacement Character (NRC) sets. The NRC sets are a group of eleven 7 bit character sets. Only one national character set at a time is available for use.

User Preferred Set: This option is only available when Terminal Emulation is operating as a VT320 terminal. With this option, you can assign the supplemental character set you use most often as a standby set. You can assign the DEC Supplemental Graphic or ISO Latin-1 set as the User Preferred Supplemental Set. When the terminal subsequently receives an escape sequence to designate the user preferred supplemental set as G0 through G3, it will use the set that is selected with this option.

Terminal Identification: From this drop-down list box, select the manner in which Terminal Emulation identifies itself to the host upon host software request. Select from: **VT100**, **VT101**, **VT102**, **VT220**, or **VT320**.

8 Bit Environment: This option determines whether Terminal Emulation sends C1 control codes to the host as single 8 bit characters or as their equivalent 7 bit escape sequences. For example, the sequence **ESC [** will be sent as part of the C1 control code when in 8 bit mode, while the CSI character will be sent when in 8 bit mode. This setting is not used for VT100; in this case, C1 control codes are always sent as 8 bit escape sequences.

VT320 Status Line Type: From the VT320 Status Line Type drop-down list box, select the type of information used in the status line (window). This determines whether or not a status window appears in the terminal window when VT320 is selected in the Terminal Type list box. When VT100 or VT220 are selected, the list box becomes disabled and No Status Line will remain selected.

No Status Line: This option indicates that no status line will be displayed in the Terminal Emulation window. This status line is not related to the separate Terminal Emulation Status Window which is accessed from the Window drop-down menu.

Indicator Status Line: Line 25 of a VT320 terminal screen will display a status line containing the current cursor position, the active or current print driver, and modem status. This stationary status line will format the current cursor position in the following manner: **(003,005)**. This example shows that the cursor is located in line 3 and column position 5.

Host Writable Status Line: This option provides specific information from the host. A Host Writable status line allows the host program status line to display any required information.

Print Mode: From the Print Mode drop-down list box, select print mode for Terminal Emulation. You can set the print mode to Auto, Controller or Normal print mode.

Auto Print Mode: Select **Auto Print Mode** to display lines received from the host to print when the cursor is moved off of the line with a <LF>, <FF>, <VT> or auto wrap.

Controller Print Mode: Select **Controller** print mode to send characters received from the host to the printer without displaying them on the screen. All characters and character sequences except NUL, XON, XOFF, CSI 5 I, and CSI 4 I are sent to the printer. Keyboard data is still sent to the host.

Note: The Auto Print/Printer Control Print Mode setting in the Options dialog can be used to determine if the standard Windows printing method will be used or if data will be sent directly to the printer.

Normal Print Mode: Select **Normal Print Mode** to turn off Auto and Controller print mode. When you select **Normal Print Mode**, any print job started by means of Auto Print or Controller Print is ended.

Answerback: In this field, enter a string value (e.g., terminal identifier) which will be sent when Terminal Emulation is queried by the remote application. When the remote application sends an ENQ character (^E or hex 5), the system will respond by returning the Answerback string, if it is defined.

Once you have entered these options, click on the **OK** command button to save this configuration and exit to the main window. Click on the **Cancel** command button exit from this dialog without saving any changes.

National Replacement Character Set

This function allows you to select a VT National Replacement Character (NRC) set. It is only applicable if you set Character Set Mode to National in the Terminal Setup function (previous section). The NRC sets are a group of eleven 7 bit character sets. Only one NRC set is available for use at a time.

To select a character set, click on **National Character Set** from the SetUp drop-down menu.

The following list contains the supported character sets:

None	Flemish	Norwegian
British	French/Belgian	Spanish
Danish	French Canadian	Swedish
Dutch	German	Swiss (French)
Finnish	Italian	Swiss (German)

Select the required character set by clicking on the character set name in the list box (see previous list). Click on the **OK** command button to select it and exit to the main window.

Map Keyboard

Terminal Emulation allows you to assign VT keys and key sequences to keys on your PC keyboard. Different keymap definitions may be saved in separate keymap files. Loading different keymap files can tailor the keymapping for particular remote applications, or for different users with specific preferences.

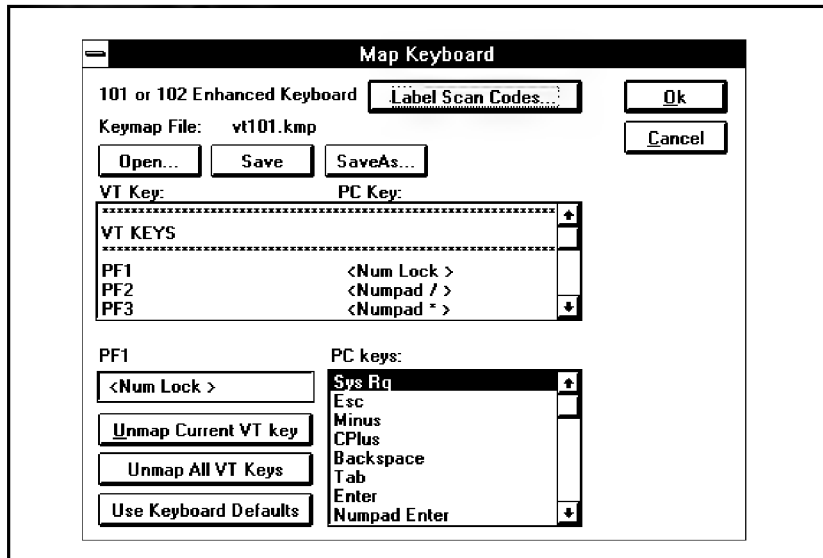
Terminal Emulation contains several keymap files with the extension .KMP, and several scan code definition files with the extension .SCN. To access these files or create specific keymap files, click on **Map Keyboard** from the SetUp drop-down menu. The Keyboard Mapping dialog will appear with the name of the Keymap file and the following information.

Label Scan Codes: To assign keyboard scan codes to user-defined names, click on the **Label Scan Codes** command button. Its dialog will appear in which you can label or name the keys on non-standard keyboards. These names will then appear in the VT Key/PC Key list box of the Map Keyboard dialog.

To assign keyboard scan codes to user-defined names, perform the following steps:

- 1 Click on the **Label Scan Codes** command button.
- 2 Click once on the Scan Code field to activate it.
- 3 From the keyboard, press the key you wish to label. The scan code value associated with this key on the PC keyboard will be displayed and the Key Name field will be activated listing its equivalent.

Figure 31
Map Keyboard dialog



- 4 In the Key Name field, type in the name you wish to assign to this PC key.
- 5 In order to see that this change has taken effect, select a different scan code from the list box.
- 6 Click on the **Save** command button to save these changes.

Note: Click on the **Use Keyboard Defaults** command button to cause any changes to revert back to the default settings.

Click on the **OK** command button to exit to the Map Keyboard dialog.

VT Key/PC Key: This list box displays each key on the VT220/320 terminal and its currently mapped PC key.

PC Keys: This list box contains all of the mappable keys on a PC keyboard (excluding alphanumeric characters) as defined in the Label Scan Codes dialog. To change the highlighted VT key mapping, select the specific key from this list.

Unmap Current VT Key: Click on this command button to unmap (disable) the selected VT key.

Unmap All VT Keys: Click on this command button to unmap (disable) all VT keys.

Use Keyboard Defaults: Click on this command button to reset the entire key map to system defaults.

Mapping a VT Key or Program Key to a PC Key

To map a VT key or Program key to a PC key, perform the following steps:

- 1 Click on the **VT** key that you wish to map in the list box.
- 2 Scroll through the PC Keys list box to find the PC key you wish to use to emulate the VT key or Program key. Click on it to select the PC key.

Note: Alternatively, you can press the actual PC key that you want to use to emulate the VT key or Program key.

This change will appear in the PC Key column of the list box.

Click on the **OK** command button to save this information and exit to the main window.

Program Keys

Terminal Emulation allows you to program function key buttons that are selectable with the mouse or from the keyboard. Each function key can contain Macros or Scripts. Macros are useful for storing frequently used commands and text strings. Scripts are useful for performing operations which may be repetitive or require automatic calculation and entry.

Note: Scripts are currently not supported by MAT. You can therefore only select **Macro** as the Program Key type.

To access this function, select **Program Keys** from the SetUp drop-down menu. The Program Keys dialog will appear.

Enter the appropriate information in the following fields.

Figure 32
Program Keys dialog

Program Keys

Double Clicking or ALT-S in Macro/Script edit box displays a list of scripts

Ok

Cancel

Type	Key Assignment	Button Label	Macro/Script
Macro	Unmapped	Key 1	
Macro	Unmapped	Key 2	
Macro	Unmapped	Key 3	
Macro	Unmapped	Key 4	
Macro	Unmapped	Key 5	
Macro	Unmapped	Key 6	
Macro	Unmapped	Key 7	
Macro	Unmapped	Key 8	

Batch 1

Clear Current Definition

Clear All Definitions

Control Characters:

NUL	(Ctrl 2, space)	+
SOH	(Ctrl A)	
STX	(Ctrl B)	
ETX	(Ctrl C)	
EDT	(Ctrl D)	
ENQ	(Ctrl E)	+

Type: For each program key that you are defining, select whether a particular program key is to be interpreted as containing a Macro or Script Name by clicking on **Macro** or **Script Name** from the Type drop-down list box.

Key Assignment: These read-only fields indicate whether or not a PC key has been assigned to the program key in the Map Keyboard editor.

Button Label: These fields can be used to place your own labels (up to 10 characters) into the program keys.

Macro/Script: In these fields, enter either the text that constitutes a Macro Key definition or the directory name for a Script file. If the associated button is defined as a Script, type in the full directory name of the Script file.

Control Characters: This list box contains an entry for all of the unprintable ASCII characters. If you require one of these control characters to appear in your macro definition, then click on the associated entry in this list box.

Program Key Group Selection: Select which key group you are currently modifying by accessing this drop-down combo box. The default number of groups is 4 (e.g., select **Batch 1** to edit the button labels numbered Key 1 to Key 8).

Clear Current Definition: Click on this command button to clear the definition in the current Macro/Script field.

Clear All Definitions: Click on this command button to clear all the definitions in the Macro/Script fields for the current group.

Mapping a Sequence of VT Keys to a PC Key

If you wish to press a single PC key and have a sequence of several bytes (including control characters) sent to the host, then perform the following steps:

- 1 Find an unused Program key and enter the stream of bytes that you wish to associate with the PC key into the Macro/Script edit box.
- 2 Assign the Program key to the PC key via the mapping procedure.

Click on the **OK** command button to save the program key definitions and exit to the main window.

Tab Setup

To change the layout of the tabs in Terminal Emulation, select **Tab Setup** from the SetUp drop-down menu. A dialog will appear in which you can modify the tabs.

Current Column Position: There are 132 column positions ranging from 0-131. To change the current column position, click on the right or left scroll bars to the desired position.

Set Tab: To set a tab, choose the appropriate column position using the scroll bars and click on the **Set Tab** command button. Currently active tab positions are indicated by a 'T'. A single digit indicates the column number.

Clear All: To remove all tabs and tab positions, click on the **Clear All** command button.

Default: Default tabs are set every eight characters or columns. To obtain the original default settings, click on the **Default** command button.

Tab Every n: Click on this command button to set tabs every 'n' columns, where 'n' is a number defined in the adjacent field.

Click on the **OK** command button to save these changes and exit to the main window.

Options

The Options command allows you to choose various operational preferences for Terminal Emulation.

To select these options, click on **Options** from the SetUp drop-down menu. The Options dialog will appear allowing you to enter the following information.

Figure 33
Options dialog

Options

Selection Type: ☐ Whole Line ☒ Rubber Band

Print Screen Mode: ☒ Bitmap ☐ Text

Auto Print/Printer Controller Print Mode: ☒ Standard Windows (FF at end of job)
☐ Passthrough (Sends data directly to printer--don't use with printers that expect special commands, such as Postscript. No FF at end of job.)

☐ Prompt on Exit When Connected
☒ Prompt on Exit When Configuration Changes
☐ Prompt on Exit When Window Positions or Sizes Change
☐ Save KMP, PHN & SCN files relative to INI directory
☐ Blink Reverse Video
☒ Keyboard AutoRepeat

Terminal Emulation Memory Manager Interrupt Number (Hexadecimal)

Jump Scroll

Ok Cancel Key Window Options >>

Selection Type: Click on the desired option button to select text from the terminal screen. Choose **Whole Line** to select whole lines at a time. Choose **Rubber Band** to select a rectangular block or a vertical column of information.

Print Screen Mode: This option allows you to determine how the system will print the contents of the Terminal Window. The screen can be printed in Bitmap or Text mode. Bitmap mode is slower than Text mode, but will allow graphics and special characters to be printed.

Auto Print/Printer Controller Mode: This option allows you to determine the auto print and printer controller modes. Choose **Standard Windows** to print the recommended print commands according to the configured Windows print driver. Choose **Passthrough** to send the raw data to the printer and bypass the recommended print commands.

Note: This setting does not affect how the Print Screen command prints; it only pertains to Auto Print and Printer Controller modes.

Keys Window Options: Use this function to edit the attributes of the Keys Window. To enter this information, click on the **Keys Window Options** command button. In the dialog which appears, enter the following information.

Keys Window Movement: From this option button box, select **Sticky Move** to have the Keys Window stay in the same position relative to the Terminal Emulation window as it is moved. Choose **Stay Put** to have the Keys Window remain stationary when the Terminal Emulation window is moved.

Rows of Buttons: In this field, enter the number of rows of buttons (keys) which will be displayed in the Keys Window.

Columns of Buttons: In this field, enter the number of columns of buttons which will be displayed in the Keys Window.

Number of Groups: In this field, enter the number of key groups to be accessed from the Keys Window.

Button Width (Characters): In this field, enter the width of each button in the Keys Window.

Set Key Button Font: Click on this command button to change the font used for the key buttons. The Font dialog will appear listing the available fonts for the selected printer. Select the font from the Font list box and enter its style and size in the Font Style and Size list boxes. Click on the **OK** command button to select this font and exit to the previous dialog.

Once you have entered this information, click on the **OK** command button to return to the Option dialog.

Prompt on Exit When Connected: Turn on (X) this check box to have Terminal Emulation prompt you for confirmation when you exit from the system.

Prompt on Exit When Configuration Changes: If changes have been made to the current configuration and this check box is turned on (X), Terminal Emulation will prompt you for confirmation when you exit from the system.

Prompt on Exit When Window Positions or Sizes Change: If changes have been made to the position or size of the window and this check box is turned on (X), Terminal Emulation will prompt you for confirmation when you exit from the system.

Save KMP, PHN, and SCN files relative to INI directory: Turn on (X) this check box to save the Keymap (extension .KMP), Phone (extension .PHN), and Scan Code (extension .SCN) definition files in the same directory as the INI files (e.g., C:\MAT\).

Blink Reverse Video: Turn on (X) this check box to set any reverse cursor characters to blinking mode. This is useful in cases where the cursor cannot be identified easily on a graphics background.

Keyboard Auto Repeat: Turn on (X) this check box to enable input characters to be repeatedly entered in the window once the key is pressed once on the keyboard and held down.

MAT Terminal Emulation Memory Manager Interrupt Number (Hexadecimal): This number defines a software interrupt number to use for communication between Terminal Emulation and the Terminal Emulation Memory Manager TSR. The default interrupt number is 60 hexadecimal, but any unused interrupt vector can be used.

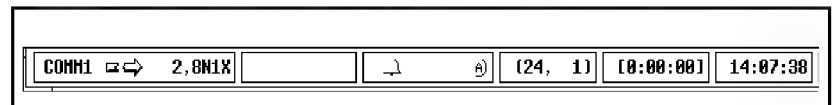
Jump Scroll: During the terminal emulation session, text will scroll up as it reaches the bottom of the main window. From the Jump Scroll drop-down list box, select the number of lines which Terminal Emulation will wait at the bottom of the window before it scrolls up. Select the interval from: **Off** (no jump; single line at a time) and **2** to **10** lines.

Click on the **OK** command button to save these changes and exit to the main menu.

Status Window

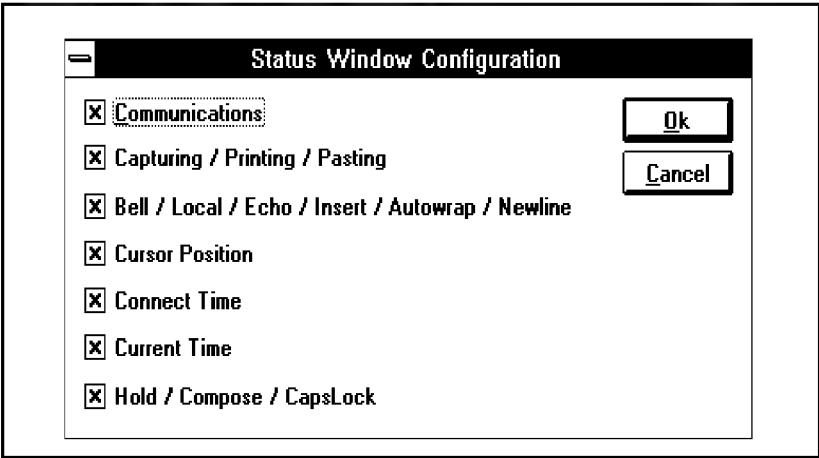
The Terminal Emulation Status Window appears below the main Terminal Emulation window and contains icons which identify the status of the current session. This includes such information as the connection status, communications parameters, and time.

Figure 34
Status window



To edit the attributes of this window, select **Status Window** from the SetUp drop-down menu. A dialog will appear allowing you to choose from the following items.

Figure 35
Status Window Configuration dialog



Communications: Turn this check box on (X) to display the connection arrow icon and the communications port (e.g., Com 2) to which Terminal Emulation is connected. If Terminal Emulation has successfully connected to the external source, then the connection arrow icon will appear solid; otherwise it will appear broken.

Capturing/Printing/Pasting: Turn this check box on (X) to display icons which indicate the status of the window. The Capture (diskette) icon indicates that the window is in capture mode; the Printer icon indicates that the text is being printed to the output device; and the Paste icon indicates that text is being pasted from the Windows Clipboard.

Bell/Local/Echo/Insert/Autowrap/Newline: Turn this check box on (X) to display the icons in the status window which identify the current emulation mode. This will enable the following icons.

Bell: The bell icon indicates that the bell (PC speaker) is enabled.

Local: This icon displays an 'L' if Terminal Emulation is in local mode.

Echo: This icon displays an 'E' if Terminal Emulation is in echo mode.

Insert: This icon displays an 'I' if Terminal Emulation is in insert mode.

Autowrap: This icon displays an 'A' if Terminal Emulation is in autowrap mode.

Newline: This icon displays an 'N' if Terminal Emulation is in newline mode.

Cursor Position: Turn this check box on (X) to display the X and Y coordinates of the cursor.

Connect Time: Turn this check box on (X) to display the amount of time Terminal Emulation has been connected to the Meridian 1. This time will appear enclosed in brackets.

Current Time: Turn this check box on (X) to display the current time of day.

Hold/Compose/CapsLock: Turn this check box on (X) to display the symbols representing keyboard control keys. This will display 'Hold' if the VT220/320 Hold Key is pressed, or if you have sent the <Ctrl-S> (XOFF) sequence. It will also display 'Caps' if the CapsLock key is pressed.

Click on the **OK** command button to save these changes and exit to the main window.

Window control

The Window menu allows you to control the size of the Terminal window as well as how the Status and Keys windows are displayed.

Terminal Window

The Terminal window receives incoming data from the remote application. Its title bar displays the VT Terminal type that was most recently selected in the Terminal Setup dialog. To modify the size of the Terminal Emulation window, click on **Terminal Window** from the Window drop-down menu. This will display another cascading menu with the following options.

Full Size

Select **Full Size** to increase the size of the terminal window. This will widen the window to display all 80 columns in 80-column mode and all 132 columns in 132-column mode. It will also expand the window to display all 24 lines of the display when VT100 or VT220 has been defined as the current terminal type (or 25 lines for VT320).

Restore Size

Select **Restore Size** to return the window width and height to the previous size.

Reset Terminal

Select **Reset Terminal** to perform a soft terminal reset. All character attributes and scrolling regions are cleared out and the screen is cleared.

Clear Screen

Select **Clear Screen** to blank the screen leaving the cursor at the current position.

Show Scroll Bars

Select **Show Scroll Bars** to display scroll bars within the Terminal Emulation window. Use these scroll bars to scan through the contents of the window.

Hide/Show Status Window

Click on **Hide Status Window** from the Window drop-down menu to suppress the display of the Status Window (the window displaying the connection status for this session). This command will then change to **Show Status Window**. Click on **Show Status Window** to display the Status Window again.

Hide/Show Keys Window

Click on **Hide Keys Window** from the Window drop-down menu to suppress the display of the Keys Window. This window displays the keys defined in the Program Keys function. This command will then change to **Show Keys Window**. Click on **Show Keys Window** to display the Keys Window again.

Hide/Show Toolbar Window

Click on **Hide Toolbar Window** from the Window drop-down menu to suppress the display of the Toolbar Window (the icons allowing you to edit the window text). This command will then change to **Show Toolbar Window**. Click on **Show Toolbar Window** to display the Toolbar Window again.

Terminal

The Terminal commands start or stop the actual terminal emulation based on the communications parameters defined for this site's application.

Connect

To initiate the terminal emulation session for this site, click on **Connect** from the Terminal drop-down menu. This will activate the connection to the Meridian 1 and display the communications commands sent to it. You are now ready to send and receive commands with the Meridian 1 through the Terminal Emulation main window editor.

Use the Window and Edit commands to alter the display of the main window or cut, copy, and paste the emulation text as required.

Disconnect

To end the terminal emulation session, click on **Disconnect** from the Terminal drop-down menu. This will terminate the session and disconnect the telephone line to the Meridian 1.

Help

Terminal Emulation contains a **Help** facility which provides information on its functions and commands. You can access this Help function from any function dialog or window which contains the Help command.

To obtain help for a topic, click on Help from the specific dialog or window. This will access the Windows Help function which allows you to scroll through the help topics, search for a specific topic, and print the help information. Use the Windows Help commands to scan through the description of Terminal Emulation. To view a list of Help topics for this application, click on **Contents** from the Help drop-down. Choose from one of the items in this list to display the help topic.

Exit from the Help function by clicking on **Exit** from the File drop-down menu in the Help window.

Keyboard Mappings

The following table lists the keyboard mappings for Terminal Emulation on standard 101 and 102 key keyboards.

Table 1
Keyboard Mappings - VT Key

VT Key	PC Key
PF1	Num Lock
PF2	Numpad Slash
PF3	Numpad Star
PF4	Numpad Minus
Find	Insert
Insert	Home
Select	Delete
Up Arrow	Up Arrow
Down Arrow	Down Arrow
Left Arrow	Left Arrow
Right Arrow	Right Arrow
F6	F6
F7	F7

Table 1
Keyboard Mappings - VT Key

VT Key	PC Key
F8	F8
F9	F9
F1	0
F11	F11
F12	F12
F13	Sys Rq
F14	Scroll Lock
Help	F2
Do	F3
F17	Ctrl-F7
F18	Ctrl-F8
F19	Ctrl-F9
F20	Ctrl-F10

Table 2
Keyboard Mappings - VT Action

VT Key	PC Key
Remove	Page Up
Next Screen	Page Down
Prev Screen	End
Hold Screen	F1
Compose	Unmapped
Delete	Backspace
Keypad Comma	Numpad Plus
Keypad Enter	Numpad Enter
Break	F5
Long Break	Shift-F5
Control Break	Ctrl-F5
Print Screen	Unmapped
Keypad 0	Numpad 0
Keypad 1	Numpad 1

Table 2
Keyboard Mappings - VT Action

VT Key	PC Key
Keypad 2	Numpad 2
Keypad 3	Numpad 3
Keypad 4	Numpad 4
Keypad 5	Numpad 5
Keypad 6	Numpad 6
Keypad 7	Numpad 7
Keypad 8	Numpad 8
Keypad 9	Numpad 9
Keypad Minus	Ctrl-Numpad Minus
Keypad Period	Numpad Del

Table 3
Keyboard Mappings - VT Action Scroll

VT Action	PC Key
Scroll Left	Ctrl-Left Arrow
Scroll Right	Ctrl-Right Arrow
Scroll Up	Ctrl-Up Arrow
Scroll Down	Ctrl-Down Arrow